investment. No new matter is believed added by this amendment. Support is shown in the claims as originally filed (e.g., claims 1-5).

Prior to discussion of the merits of the Examiner's rejections, a brief review of embodiments may be helpful. Some embodiments of the present invention relate to a method and apparatus for evaluating an application for a financial product and making decisions regarding the approval of such applications. These decisions are made, in part, by calculating expected loss data and then calculating an expected return on investment (ROI). As described in the application (e.g., at page 20) expected loss data may be calculated by taking the difference between the book value and the market resale value of the collateral. This gross loss severity, or expected loss value, may be determined for each month for which a termination event may occur, throughout the term of the financial product . The ROI is then calculated by taking the ratio of the expected net income (NI) to the expected annualized net investment (ANI), for each of the termination events, as well as for the full-term event. Application approval and/or denial decisions are then made by comparing the calculated expected ROI with an established ROI target determined by the financial institution. In this manner, embodiments provide an ability to establish and enforce expected ROIs for particular products and reduce uncertainty in making approval decisions.

In some embodiments, financial product price tiers are used to increase the consistency of application approval decisions. Product pricing tiers allow financial institutions to tailor products to individual applicants based on certain important criteria, such as expected loss data (pg. 17, lines 18-29). The use of price tiers also "allows for differential pricing of products based on historical performance within each product, and also eliminates some of the inconsistency of approvals which can result from blanket reliance on the discretion of credit managers" (pg. 2, lines 19-22).

Applicants believe these embodiments provide new, useful, and non-obvious advantages and benefits unavailable in prior systems.

Rejections Under 35 U.S.C. §103(a)

Claims 1-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,696,907 (the '907 patent). Applicants respectfully traverse this ground of rejection.

The '907 patent describes "a method and system for performing risk and credit analysis of financial service applications with a neural network" (Abstract, pg.1, pp.1). The '907 patent describes a method where a neural network "is optimized by a non-iterative regression process, as opposed to the computationally intensive back-propagation algorithm" (col.2, lines 41-43). The process continues as "the neural network outputs a measure of risk" (col.2, lines 45-46), so that "[g]uidelines for approving financial service applications are rewritten according to observations of the network weights and issued to credit managers for future use" (col.3, lines 7-9). In general, the '907 patent uses a neural network to weigh the risks of an application and locate areas where business volume may increase with a minimum increase in loss. Weighted risk data is made available to credit managers so that they may make their approval and/or denial decisions based at least in part on the findings of the neural network. As will be described, the '907 patent does not teach or suggest features of embodiments of the present invention.

A. Claim 1

Applicants respectfully assert that the '907 patent fails to teach, suggest, or render obvious, embodiments of the present invention as recited in claim 1. In particular, the '907 patent fails to disclose, teach, or suggest a method that includes: (1) "calculating, based at least in part on said application data, expected loss data"; or (2) "calculating, based at least in part on said expected loss data, a return on investment for said application".

Nowhere in the '907 patent is "calculating, based at least in part on said application data, expected loss data" taught or suggested. The Examiner states that the '907 patent "discloses a method...comprising: ...calculating, based at least in part one [sic] application data, expected loss data (See ['907 patent], at least col. 2, ll. 9-24)" (Paper No. 5, pg.2, lines 14-18). Applicants have reviewed the section of the '907 patent referenced by the Examiner and respectfully disagree that the section (or any other) teaches or suggests "calculating, based at least in part on said application data, expected loss data." At most the cited section teaches that a neural network

can be easily examined "to infer directions where business volume can increase with a minimum increase in loss" ('907 patent, col.2, lines 15-18). Inferring directions of a business which can increase with a minimum of loss is not the same as, or even relevant to, the calculation of expected loss data as recited in claim 1. Further, there is no suggestion or teaching in the '907 patent of the desirability of performing such a calculation.

Nowhere in the '907 patent is "calculating, based at least in part on said expected loss data, a return on investment for said application" taught or suggested. The Examiner agrees that the '907 patent lacks this feature (see Paper No. 5, pg. 2., lines 19-20), and asserts that it "would have been obvious ... to expect a greater return on investment." (See Paper No. 5, pg. 2, lines 22-23). Applicants respectfully traverse this rejection.

Embodiments utilize a particular calculation (a calculation of ROI based on expected loss data) to help improve the performance of application approval decisions. Typical financial product approval decisions are subjectively made and based upon an applicant's credit rating (pg.6, lines 12-26). Embodiments provide an application approval process which does not have the subjectivity that was associated with prior processes. Calculating the ROI based on expected loss data provides an even more accurate and comprehensive ROI figure, which takes into account not only the expected gross return, but also potential losses due to termination events, provides a significantly higher quality metric to base decisions upon, compared to the simple credit rating method. Previous methods fail in this regard because "[b]y simply approving or disapproving applications based on credit risk and loss risk calculations, the return on investment for a particular application may not be maximized" (App., pg. 2, lines 27-30).

The '907 patent does not provide any suggestion or teaching that such a calculation of ROI (based at least in part on expected loss data) may be performed or that it would be desirable. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP 706.02(j). In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 21 USPQ2d 1941 (Fed. Cir. 1992). It is the burden of the Examiner to establish a prima facie case of obviousness by pointing to a specific teaching in the record that would have

motivated one of ordinary skill in the art to modify the prior art in the manner suggested by the Examiner. In re Fine, at 1598.

Applicants respectfully submit that the Examiner has not met this prima facie burden for the pending claims because the Examiner has not pointed to a specific teaching or suggestion in the prior art but has merely provided an unsupported conclusory statement, and cited generally a portion of the '907 Patent ('907 Patent, col. 6, lines 47+) that does not teach, suggest, or provide any motivation to "calculat[e], based at least in part on said expected loss data, a return on investment for said application". The Examiner simply asserted that "it would have been obvious ...to expect a greater return on investment" under the '907 Patent, which is not sufficient to meet the Examiner's burden of providing a prima facie case of obviousness.

Applicants respectfully urge the Examiner to apply a proper obviousness analysis and point to a specific suggestion in the prior art or within the knowledge of one of ordinary skill in the art that would make the suggested modification of the prior art result in Applicants' claimed invention. Absent any such suggestion, Applicants respectfully assert that claim 1 is patentable over the cited reference, at least because the '907 patent fails to teach or suggest "calculating, based at least in part on said expected loss data, a return on investment for said application". Further, as discussed above, claim 1 is believed patentable as the '907 patent fails to teach or suggest "calculating, based at least on said application data, expected loss data." Accordingly, Applicants respectfully request withdrawal of the rejection of claim 1.

B. Claim 2

Applicants respectfully assert that the '907 patent fails to teach, suggest, or render obvious, embodiments of the present invention as recited in dependent claim 2. Claim 2 is patentable at least as depending from claim 1 (which is patentable for the reasons set forth above). Further, the '907 patent fails to disclose, teach, or suggest a method that includes "making an application approval decision based on said return on investment."

Nowhere in the '907 patent is "making an application approval decision based on said return on investment" taught or suggested. The Examiner has not provided any indication of how it was believed that the '907 patent taught or suggested, "making an application approval decision based on said return on investment." Applicants have thoroughly investigated the '907 Patent

and were unable to locate any teaching or suggestion of "making an application approval decision based on said return on investment." Instead, the '907 patent appears to teach away from "making an application approval decision based on said return on investment" by indicating that the '907 patent invention "outputs a measure of risk" ('907 patent, col.2, lines 45-46), so that "[g]uidelines for approving financial service applications are rewritten according to observations of the network weights and issued to credit managers for future use" ('907 patent, col.3, lines 7-9). The claimed embodiment of Applicant's invention, as recited in claim 2, improves upon prior approaches, at least in part by automating application approval decisions, and removing the credit manager from the process. The use of human credit managers to manually approve applications can often lead to inconsistent lending practices and puts a strain on institution resources (See, App., pg. 2, lines 7-14). The claimed embodiment of Applicant's invention reduces institutional resource strain and provides improved consistency among application approval decisions. Accordingly, claim 2 is believed patentable because the '907 patent fails to disclose, teach, or suggest a method that includes "making an application approval decision based on said return on investment."

C.   Claims 3-17

Claims 3-17 are believed patentable at least as depending on patentable base claims.

D.   Claim 18

Applicants respectfully assert that the '907 patent fails to teach, suggest, or render obvious, embodiments of the present invention as claimed in claim 18. Claim 18 is patentable for reasons similar to those given for claim 1 above. Further, the '907 patent fails to disclose, teach, or suggest a method which includes (1) "evaluating an application for a financial product for which at least one price tier has been established", (2) "calculating, based at least in part on said severity of loss of said termination scenarios, a return on investment (ROI) for said application", or (3) "approving said application if said calculated ROI is within an expected ROI threshold."

Some embodiments, including the embodiment recited in claim 18, provide improved approval systems which utilize price tiers and price tier data to improve the consistency of application approval decisions (See, App., pg. 2, lines 15-22). Using price tiers "allows for

differential pricing of products based on historical performance within each product, and also eliminates some of the inconsistency of approvals which can result from blanket reliance on the discretion of credit managers" (App., pg. 2, lines 19-22). Calculating the ROI based on severity of loss and termination scenarios provides a comprehensive ROI value from which improved application approval decisions can be made. By including severity of loss and termination scenario data in the ROI calculation, the need to rely upon a financial advisor's subjective interpretation of an applicant's credit rating is removed. The use of ROI threshold targets and comparing an actual expected ROI to such targets, ensures that the approval decisions are made efficiently and intelligently. None of these features are provided by the '907 patent.

Nowhere in the '907 patent is the use of <u>price tiers</u>, <u>severity of loss of termination scenarios</u>, or <u>approving an application if an ROI is within a threshold</u> taught or suggested. Nor would it have been obvious to modify the '907 patent to provide such features. The Examiner has pointed to a general section of the '907 patent as teaching these features (i.e., the Examiner refers to "col. 6, lines 47+"). Applicants have reviewed this section and have simply found not teaching or suggestion of the use of price tiers, severity of loss termination scenarios, or ROI thresholds. Applicants respectfully request that the Examiner provide a more specific citation to the alleged teachings of the '907 patent in support of his rejection of this claim 18.

There is simply no teaching or suggestion in the '907 patent to provide any of these features. Nor is there any teaching or suggestion which would render the claimed features obvious. Applicants respectfully request that the Examiner withdraw the rejection of claim 18.

Applicants respectfully suggest that claim 18 is patentable over the cited art at least because the art fails to teach or suggest (1) "<u>evaluating an application for a financial product for which at least one price tier has been established</u>", (2) "<u>calculating, based at least in part on said severity of loss of said termination scenarios, a return on investment (ROI) for said application</u>", or (3) "<u>approving said application if said calculated ROI is within an expected ROI threshold.</u>"

E.   <u>Claims 19-23</u>

Claim 19-23 are believed patentable at least as depending from patentable base claims.

F.   New Claims 25 and 27

New claims 25 and 27 are believed patentable at least for the reasons set forth above in conjunction with the discussion of claims 1 and 2 (e.g., the '907 patent fails to teach or suggest a system which <u>calculates expected loss data</u>, <u>calculates, based on the expected loss data, an ROI</u>, and which <u>makes an application approval decision based on the ROI</u>).

G.   New Claim 26

New Claim 26 is believed patentable at least as depending from patentable base claims.
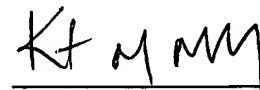

Conclusion

In view of the above, all pending claims are patentable over the cited reference. Applicants respectfully request allowance of pending claims 1-27. Applicants' silence with respect to other comments made in the Office Action does not imply agreement with those comments.

If any issues remain, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact Kurt M. Maschoff using the information provided below.

Respectfully submitted,

December 23, 2002
Date

Kurt M. Maschoff
Registration No. 38,235
Buckley, Maschoff, Talwalkar & Allison LLC
Five Elm Street
New Canaan, CT 06840
(203) 972-0081

APPENDIX A

AMENDED CLAIMS SHOWING CHANGES RELATIVE TO PREVIOUS VERSIONS

25.   (New) A method of evaluating an application for a financial product, the method comprising:

receiving application data;

calculating, based at least in part on said application data, expected loss data;

calculating, based at least in part on said expected loss data, a return on investment for said application; and

making an application approval decision based on said return on investment.

26.   (New) The method of claim 25, wherein said making an application approval decision further comprises:

comparing said return on investment with an expected return on investment.

27.   (New) An apparatus for evaluating an application for a financial product, the apparatus comprising:

a processor;

a communication device, coupled to said processor, receiving application data from at least a first user device; and

a storage device in communication with said processor and storing instructions adapted to be executed by said processor to:

calculate, based at least in part on said application data, expected loss data;

calculate, based at least in part on said expected loss data, a return on investment for said application; and

make an application approval decision based on said return on investment.